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2 What is claimed is

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4 1. A method for sterilizing industrial products comprising the steps of:

5 conditioning an industrial product to be sterilized by placing the product in a
6 chamber, evacuating the chamber, pulsing steam and/or heated inert gas into the chamber,
7 and re-evacuating the chamber;

8 injecting a sterilent gas into the chamber;

9 introducing an overpressure of inert gas into the chamber;

10 holding the product in the chamber until the product is sterilized;

11 degassing the product.
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13 2. The method for sterilizing industrial products of claim 1 wherein the heated inert gas
14 is Nitrogen and wherein the sterilent gas is ethylene oxide.

15 3. The method for sterilizing industrial products of claim 1 further comprising the step
16 of evacuating the chamber after holding the product in the chamber and pulsing in steam
17 and/or heated inert gas into the chamber.

18 4. The method for sterilizing industrial products of claim 3 wherein the heated inert gas
19 is Nitrogen and wherein the sterilent gas is ethylene oxide.

20 5. The method for sterilizing industrial products of claim 4 wherein the evacuating the
21 chamber results in the pressure in the range of 1 to 3 inches of mercury.

22 6. The method for sterilizing industrial products of claim 3 wherein the step of
23 degassing the product is accomplished by evacuating the chamber, pressurizing the chamber
24 with 3 to 50 inches of mercury with an inert gas, and repeating until the product is degassed.

25 7. The method for sterilizing industrial products of claim 3 wherein the step of
26 degassing the product is accomplished by evacuating the chamber down to 3 to 7 inches of
27 mercury and pulsing the chamber with 5 to 9 inches of heated inert gas.

28 8. The method for sterilizing industrial products of claim 6 and 7 wherein the wherein
29 the step of degassing the product is further accomplished by injecting the chamber with warm
30 air.

1 9. The method for sterilizing industrial products of claim 5 further comprising the step
2 of real-time monitoring the concentration of ethylene oxide gas in the headspace.

3 10. The method for sterilizing industrial products of claim 9 wherein the step of
4 degassing the product is accomplished by evacuating the chamber, pressurizing the chamber
5 with 3 to 50 inches of mercury with Nitrogen, and repeating until the product is degassed.

6 11. The method for sterilizing industrial products of claim 9 wherein the step of
7 degassing the product is accomplished by evacuating the chamber down to 3 to 7 inches of
8 mercury and pulsing the chamber with 5 to 9 inches of heated Nitrogen.

9 12. The method for sterilizing industrial products of claim 10 and 11 wherein the wherein
10 the step of degassing the product is further accomplished by injecting the chamber with warm
11 air.

12 13. The method of claim 6 wherein evacuating the chamber as a part of degassing the
13 product is performed at a rate in the range of 0.1 to 0.5 inches per minute.

14 14. A method for sterilizing industrial products comprising the steps of: >

15 conditioning an industrial product to be sterilized by placing the product in a
16 chamber, evacuating the chamber, pulsing steam and/or heated inert gas into the chamber,
17 and re-evacuating the chamber;

18 injecting ethylene oxide gas into the chamber;

19 introducing 5 to 15 inches of mercury of Nitrogen overpressure into the
20 chamber;

21 holding the product in the chamber while the product is sterilized;

22 evacuating the chamber to a pressure of 1 to 3 inches of mercury;

23 pulsing in steam and/or heated Nitrogen into the chamber; and

24 injecting the chamber with warm air.

25 15. The method of claim 14 wherein evacuating the chamber to a pressure of 1 to 3
26 inches of mercury is done at a rate of 0.1 to 0.5 inches per minute.

27 16. The method for sterilizing industrial products of claim 15 wherein the step of pulsing
28 in steam and/or heated Nitrogen into the chamber is repeated one or more times.

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